

# 2006 NETS Symposium



## The Greenup Lock Closure Survey and Analysis

*[www.corpsnet.us](http://www.corpsnet.us)*

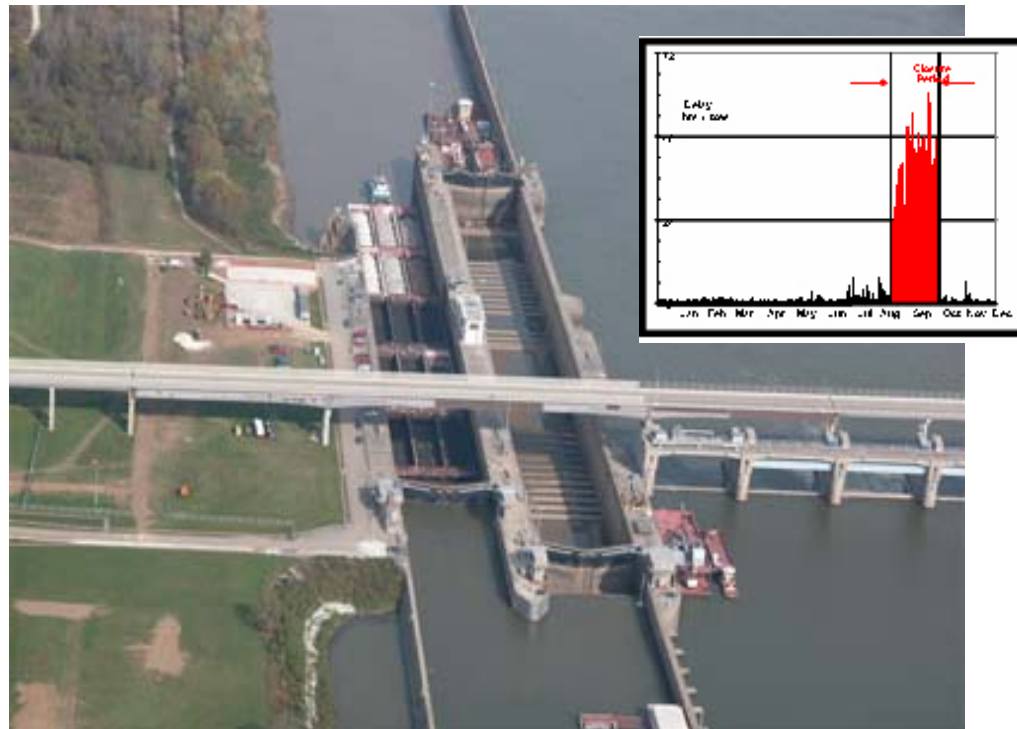
Dale Kelz – CELRH-NC  
12-14 January 2006



U.S. Army  
Corps of Engineers  
Great Lakes and Ohio River Division

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## Shipper and Carrier Response to the September - October 2003 Greenup Main Lock Closure



February 2005

## Greenup Closure Survey – the event

- 18-day main chamber closure (8-26 Sep 2003) announced on 11 Aug 2003.
- 28-day extension to main chamber closure (to 24 Oct 2003) announced on 19 Sep 2003.
- Potential 14-day extension to main chamber closure (to 7 Nov 2003) announced on 7 Oct 2003.
- Main chamber open for service on 31 Oct 2003

# Greenup L&D

## DS Middle Wall Leaf



# Greenup Closure Survey - history

- 1991
  - 32-day scheduled closure
  - \$5.7M transportation delay costs
- 1998
  - 19-day scheduled closure
  - \$3.6M transportation delay costs
- 1999
  - 30-day unscheduled closure
  - \$3.6M transportation delay costs
- 2003
  - 18-day scheduled → 35 day unscheduled closures
  - \$13.2M transportation delay costs

# Ultimate Objective - Ability to Estimate Closure Impacts

Based on –

- Closure Notification or Lack Thereof
- Type/Duration of Closure – Main/Auxiliary/Both
- Time of Year
- Commodity Types, Volumes, Values, O/Ds
- Industry Types of Those Affected
- Plants/Companies Affected, Transportation Options
- Alternative Company Responses to Closure
- Towing Company Responses to Closure

# Greenup Closure Survey - Goals

- Critique of the Closure Procedures
- Operational Adjustments
  - towing operations
  - plant operations
- Increased Costs
  - transportation costs
  - plant costs
  - other associated costs
- LPMS Analysis

# Greenup Closure Survey

- Shipper Survey
  - 126 companies surveyed
  - 64 million tons (98%)
  - 32 responses (25%)
  - 29 million tons (45%)
- Carrier Survey
  - 9 companies surveyed
  - 6 responses (67%)



# Greenup Closure Survey Notification/Procedures

- Notification
  - adequate for the scheduled period
  - inadequate for the unscheduled period
  - complaints of no notification whatsoever
- Procedures
  - general satisfaction with procedures
  - complaints of not following established procedures

## Greenup Shipper Survey - responses

● No change in procedures	11
● Stockpiled product and waited	12
● Switched to overland modes	6
● Switched to new product source	3
● Altered production processes	4
● Switched production facilities	2
● Substituted purchased product	1

# **Greenup Closure Survey**

## **Utility Responses -- interview**

- Stockpile and wait for lock opening
- Divert coal to alternative modes
- Shift coal sources to avoid closed lock
- Close plants that cannot receive coal and re-dispatch or purchase power off the grid

## Greenup Carrier Survey - responses

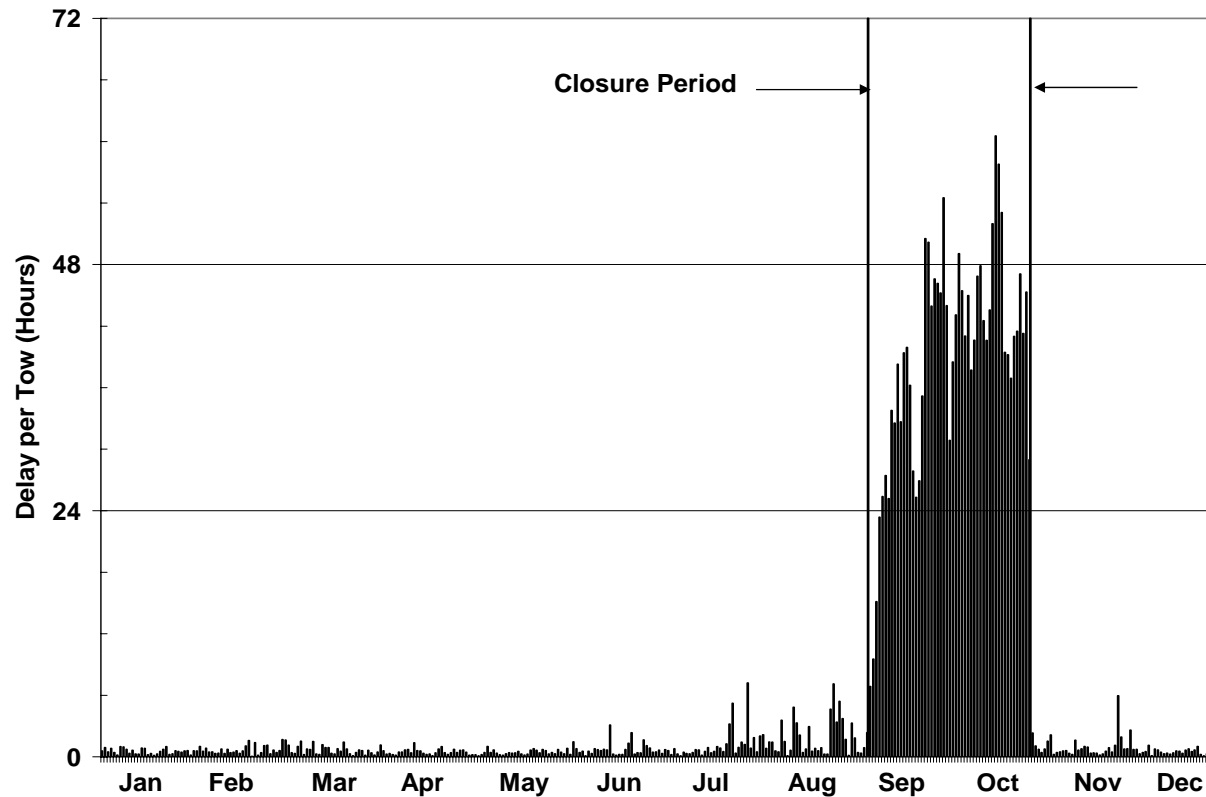
- Towboats remained in queue w/barges
- Companies maintained normal tow sizes
- Companies participated in industry self-help
- Companies did not avoid the lock

# Greenup Closure Survey

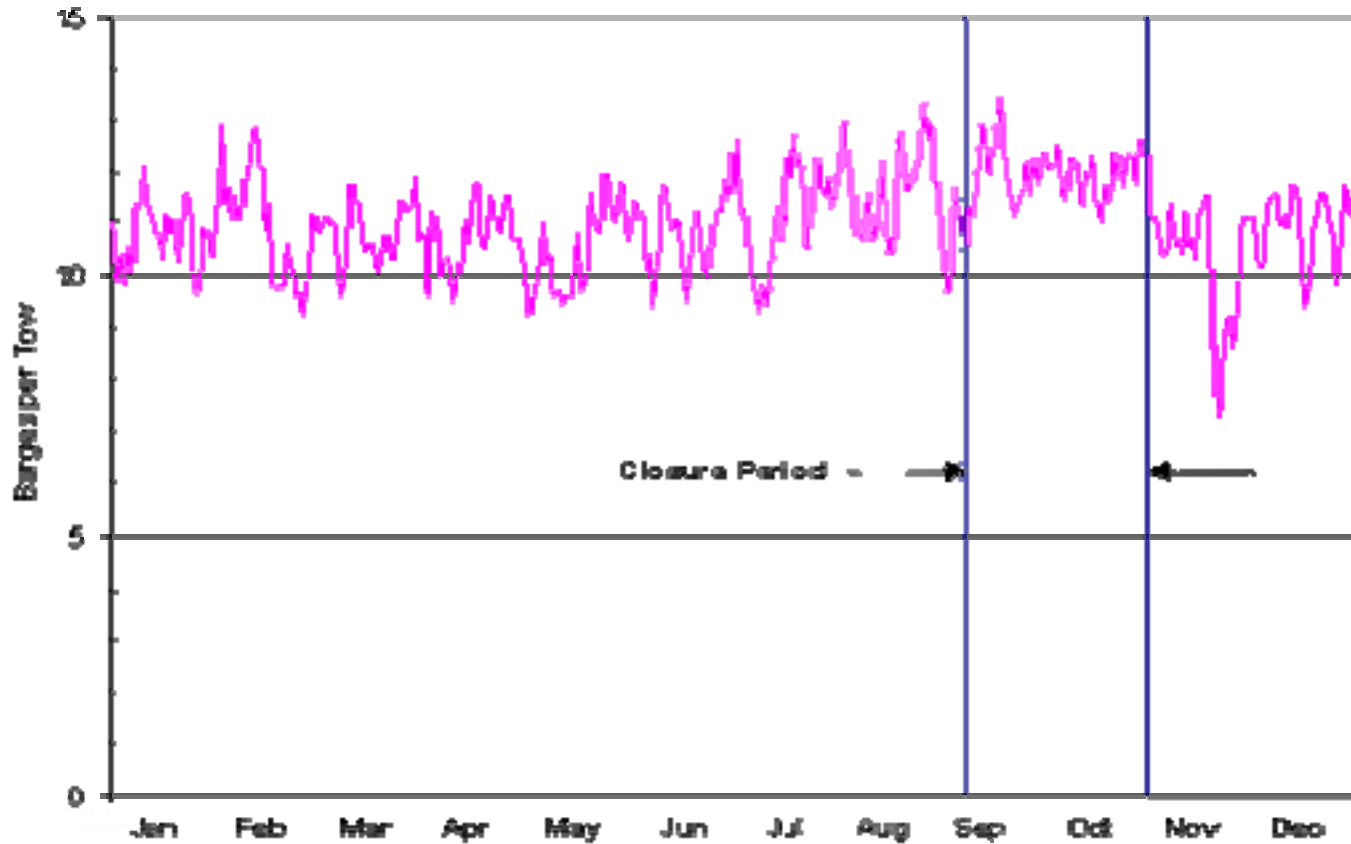
## Shipper & Carrier Reactions

- Shippers
  - increased stockpiles
  - alternative transportation
  - greater involvement in closure planning & procedures
  - assumption of “worst-case” scenarios
- Carriers
  - greater involvement in closure planning & procedures
  - assumption of “worst-case” timelines

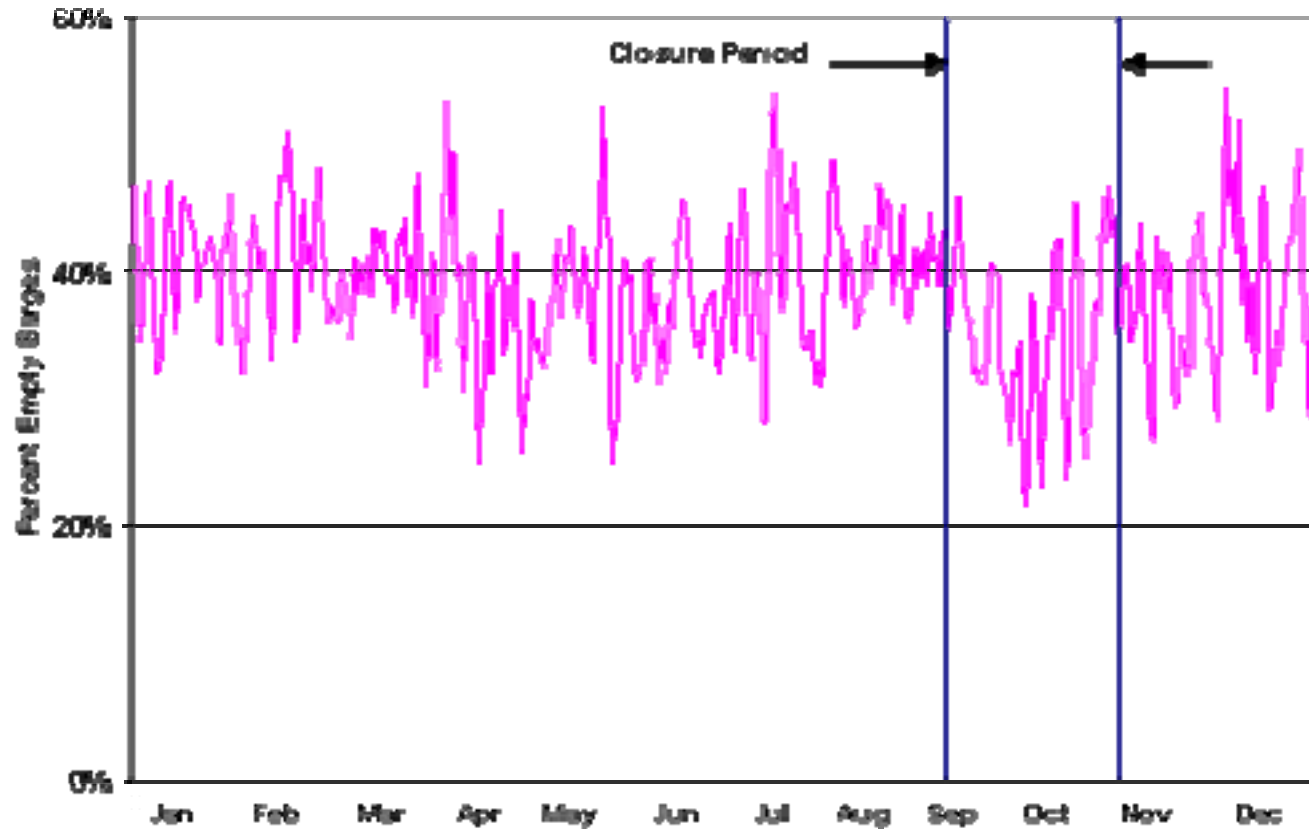
# Greenup Closure Survey – LPMS Analysis -- Delay per Tow



# Greenup Closure Survey – LPMS Analysis -- Barges per Tow

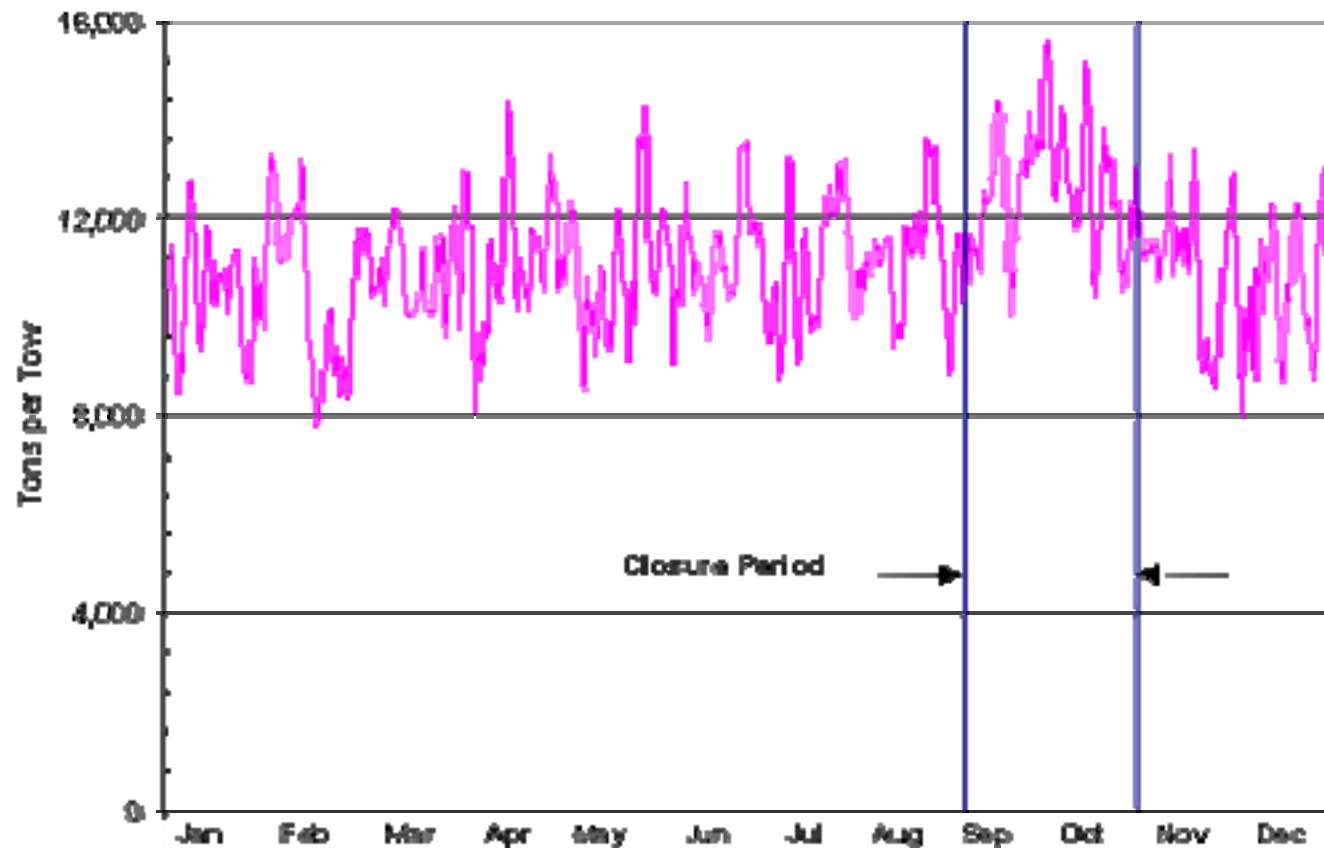


# Greenup Closure Survey – LPMS Analysis -- Percent of Empty Barges

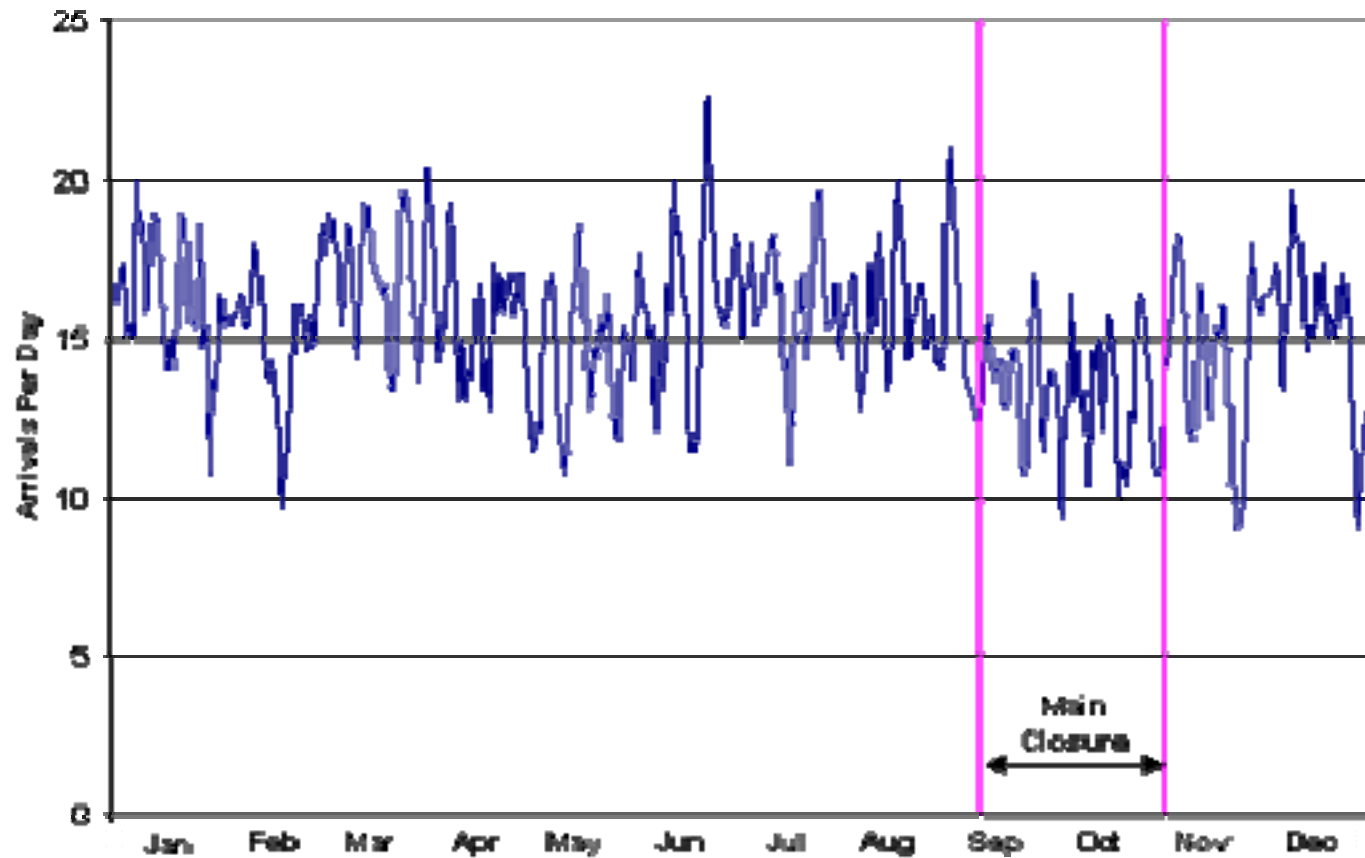




# Greenup Closure Survey – LPMS Analysis -- Tons per Tow



# Greenup Closure Survey – LPMS Analysis -- Arrivals per Day



## **Greenup Closure Survey – LPMS Analysis -- Carrier Strategies**

- Increase barges per tow
- Decrease percentage of empty barges
- Increase tons per tow
- Decrease arrivals

## Greenup Closure Survey - total costs (thousands of dollars)

• Switching modes/routes	\$8,600
• Switching product sources	1,900
• Stockpiling	25
• Changing production processes	220
• Switching production facilities	36
• Demurrage	10
• Additional equipment	2,500
• Lost Sales	13,100
• Other Costs	2,300
• Transportation Delay Cost (computed)	13,200
Total Costs	\$41,891